

DESMODIUM: PRELIMINARY STUDIES—III¹BERNICE G. SCHUBERT²

IN the preparation of a treatment of the genus *Desmodium* for the eighth edition of Gray's Manual it has been necessary to make certain nomenclatural changes, describe a few previously unrecognized members of the genus and realign some relationships among the North American species. I had hoped by this time to present a comprehensive study of the species of *Desmodium* of the United States and Mexico, but other duties preclude its completion now. This shorter paper, however, the third of the series of Preliminary Studies, will precede by only a brief interval, I trust, the first of the new series of Monographic Studies in *Desmodium*.

Although *Desmodium* was conserved over the name *Meibomia* by the International Botanical Congress of Vienna in 1905,³ Schindler, in 1934, proposed in his paper "*Desmodium* und *Meibomia*"⁴ to maintain both names, assigning to the genus *Meibomia* all the species in the Manual range except *D. nudiflorum*, *D. glutinosum* and *D. pauciflorum*. I shall discuss Schindler's thesis in a later paper, but I do not propose to maintain *Meibomia* as a distinct genus.

For the purpose of seeing more clearly the relationships between species I have arranged them in Series which seem from all observations to be perfectly natural species-groups. The series are described here, but are not in this paper assigned to their respective sections.

A. MISCELLANEOUS NOTES

DESMODIUM,

Ser. **Americana**, ser. nov., herbae, ascendentes vel erectae; staminibus monadelphis; lomentorum suturo superiori plus

¹ *Desmodium: Preliminary Studies—I*, in *Contrib. Gray Herb.* cxxix. 3–31 (1940); *Desmodium: Preliminary Studies—II*, op. cit. cxxxv. 78–115 (1941).

² I am very grateful to those in charge of the following herbaria for their kindness in making available materials for my study: Chicago Natural History Museum (C); Florida Agricultural Experiment Station, Gainesville (Fla); Missouri Botanical Garden (Mo); New York Botanic Garden (NY); Academy of Natural Sciences, Philadelphia (Phila); U. S. National Herbarium (US). Specimens cited without indication of the herbarium in which they are found are all in the Gray Herbarium.

³ *Int. Rules of Bot. Nomencl.* 82 (1906).

⁴ Schindler in *Rep. Spec. Nov.* xx. 136 (1924).

minusve recto, isthmis angustis, sinibus altis, articulis magnis asymmetricisque.

Ascending or erect herbs; the loment with an essentially straight upper suture, narrow isthmi, deep sinuses and large somewhat asymmetrical articles.

D. glutinosum (Muhl. ex Willd.) Wood is a representative species and may be taken as the TYPE of the series; the other members are *D. nudiflorum* (L.) DC. and *D. pauciflorum* (Nutt.) DC.¹ In all other series considered in this paper the stamens are diadelphous (9 and 1). This is a very interesting group with its closest relatives in Asia. Our members have always been thought to be confined to the eastern United States (two of them with a few stations in Canada). A single collection by C. G. Pringle from the state of Nuevo Leon in Mexico and recent collections of C. H. Muller, F. G. Meyer & D. J. Rogers, E. Hernandez X. & A. J. Sharp, and Kenoyer & Crum from Nuevo Leon, Puebla and San Luis Potosi, however, add *D. glutinosum* to that already long list of species known in the eastern United States which are found also in Mexico and, in many cases, in Central America.

Ser. **Stipulata**, ser. nov., prostratae vel erectae; stipulis conspicuis, ovato-attenuatis et in basi cordatis vel semicordatis.

These are prostrate or erect herbs with conspicuous ovate-attenuate stipules, cordate or semicordate at the base. *D. canescens* (L.) DC. may be taken as the TYPE-SPECIES.

The related species in the series are *D. illinoense* Gray, *D. rotundifolium* DC. and *D. ochroleucum* M. A. Curtis. The first two species are upright and coarse and rather common in their areas; the latter two are prostrate plants, *D. rotundifolium* more or less widespread, but not abundant and *D. ochroleucum* one of our rarer species of the southeast.

Ser. **Pauciarticulata**, ser. nov., herbae, bracteis floribusque parvis, lomentibus 1-3(-4)-articulatis, articulis parvis vel medio-ocribus.

More or less spreading herbs with small bracts and flowers and few-articulate loment with small or medium-sized articles. *D. ciliare* (Muhl. ex Willd.) DC. may be taken as the TYPE-SPECIES.

Other members of the series in our flora are *D. sessilifolium*

¹ This series was defined by Schindler in Rep. Spec. Nov. xxii. 260 (1926). Although he there listed the three American species constituting the group he did not name it.

(Torr.) T. & G., *D. tenuifolium* T. & G., *D. strictum* (Pursh) DC., *D. rigidum* (Ell.) DC., *D. marilandicum* (L.) DC. and *D. lineatum* DC.

Ser. **Longibracteata**, ser. nov., herbae robustae, bracteis primariis magnis conspicuisque, floribus magnis et lomentis brevi-stipitatis.

Stout herbs with long stipules, large conspicuous, but early-deciduous, primary bracts, large flowers and short-stipitate laments. *D. canadense* (L.) DC. is a representative species which may be considered the TYPE of the series.

The other member in our flora is *D. cuspidatum* (Muhl. ex Willd.) Loud.

Ser. **Stipitata**, ser. nov., herbae robustae cum bracteis primariis floribusque minoribus et lomentis longiore stipitatis quam in serie precedente.

Usually stout herbs with the primary bracts and the flowers smaller than in the *Longibracteata*, but the laments much longer-stipitate.

The series includes some of the most confusing species-complexes in our flora, which are not yet worked out to the author's satisfaction, although in the case of *D. viridiflorum* and its nearest allies the problem seems to be much clarified. *D. viridiflorum* (L.) DC. may be considered the TYPE of the series which also includes from the Manual-range *D. Nuttallii* (Schindl.) Schub., *D. Fernaldii* Schub., *D. glabellum* (Michx.) DC., *D. paniculatum* (L.) DC., *D. perplexum* Schub., *D. humifusum* (Muhl.) Beck and *D. laevigatum* (Nutt.) DC.

The following new applications and nomenclatural changes are necessary but seem to need little discussion beyond their bibliographic records. Since *D. cuspidatum* is being taken up for *D. bracteosum* of ed. 7 rather complete synonymy is given for it as well as for its variety, where an actual nomenclatural change is involved.

D. GLUTINOSUM (Muhl. ex Willd.) Wood. The use of this name rather than *D. acuminatum* (Michx.) DC. was discussed by me in RHODORA xlv. 279 (1942). *D. glutinosum* is used rather than *D. grandiflorum* of ed. 7 since the latter was a misapplication. See references to the latter name under *D. cuspidatum* in this paper.

Forma **Chandonnetii** (Lunell) Schub., stat. nov. *Meibomia grandiflora* (Walt.) Ktze., var. *Chandonnetii* Lunell in Am. Midl. Nat. ii. 128 (1911). *D. acuminatum* (Michx.) DC., forma *Chandonnetii* Fassett in RHODORA, xxxviii. 189 (1936).

Forma **unifoliolatum** (Schub.) Schub., comb. nov. *D. acuminatum* (Michx.) DC., forma *unifoliolatum* Schub. in RHODORA, xxxix. 98 (1937).

D. ROTUNDIFOLIUM DC., forma **glabratum** (Gray) Schub., stat. nov. Var. *glabratum* Gray, Man. ed. 5, 135 (1867).

D. CUSPIDATUM (Muhl. ex Willd.) Loud., Hort. Brit. 309 (1830) [incorrectly attributed to DC.]; Torr. & Gray, Fl. N. Am. i. 360 (1838); Fernald & Schubert in RHODORA l. 203 (1948) [discussion]. *Hedysarum cuspidatum* Muhl. ex Willd., Sp. Pl. iii². 1198 (1802). *D. bracteosum* (Michx.) DC., β . *cuspidatum* (Muhl. ex Willd.) DC., Prod. ii. 329 (1825). *Meibomia cuspidata* (Muhl. ex Willd.) Schindl. in Rep. Spec. Nov. xx. 140 (1924). *Hedys. bracteosum* Michx. Fl. Bor.-Am. ii. 73 (1803). *D. bracteosum* (Michx.) DC., Prod. ii. 329 (1825); Robinson & Fernald in Gray, Man. ed. 7, 520 (1908); Fassett in RHODORA xxxviii. 96, 97 (1936) et in Legum. Pls. of Wisc. 96 (1939). *M. bracteosa* (Michx.) Ktze., Rev. Gen. i. 195 (1891). *D. bracteatum* Loud., Hort. Brit. 309 (1830) [incorrectly attributed to DC. and undoubtedly referable here]. *Hedys. grandiflorum* Walt. Fl. Carol. 185 (1788) non Pall. 1773. *D. grandiflorum* (Walt.) DC., Prod. ii. 338 (1825). *M. grandiflora* (Walt.) Ktze., Rev. Gen. i. 196 (1891); Blake in Bot. Gaz. lxxviii. 277 (1924) [discussion]; Schindl. in Rep. Spec. Nov. xxii. 276 (1926) [discussion].

There has been considerable changing about of names for this plant but, as shown in the discussion of Walter's plant, *D. cuspidatum* is the name which must be taken up.

Var. **longifolium** (Torr. & Gray) Schub., comb. nov. *D. canadense* (L.) DC., β . *longifolium* Torr. & Gray, Fl. N. Am. i. 365 (1840). *D. longifolium* Nutt. ex Torr. & Gray, l. c., nomen nudum in synonym.; Smyth in Trans. Kans. Acad. Sci. xvi. 159 (1899). *M. longifolia* (Torr. & Gray) Vail in Bull. Torr. Bot. Cl. xxiii. 140 (1896). *D. bracteosum* (Michx.) DC., var. *longifolium* (Torr. & Gray) Robinson in RHODORA x. 34 (1908); Robinson & Fernald in Gray, Man. ed. 7, 520 (1908); Fassett, Legum. Pls. of Wisc., 96, fig. 49, pl. xii, figs. 62 a-e (1939).

B. DESMODIUM VIRIDIFLORUM AND ITS CLOSEST ALLIES

There has been in the past considerable uncertainty concerning some species of *Desmodium* in the southern part of the Manual-range and extending beyond it. Chiefly the misunderstanding has centered on *D. viridiflorum*, a rather close relative described

by Schindler in 1927 as *Meibomia Nuttallii*, *D. rhombifolium* and *D. floridanum* (not yet recorded from the Manual-range). Some of the difficulties were recognized by Torrey and Gray who, however, did not clarify the situation.

In the treatment of the genus prepared for the forthcoming edition of Gray's Manual I am maintaining *D. viridiflorum*, *D. Nuttallii* and *D. laevigatum*, as well as a new species, *D. Fernaldii*, and am treating *D. rhombifolium* as a nomen confusum. I have, fortunately, been able to see type-material or -photographs, or authentic material for all the species involved in this complex. Inasmuch as it has been concerned in questions of identity with species of the Manual-range I am also including *D. floridanum* in this detailed treatment and discussion.

- a. Pedicels mostly short, 3–8.5 mm. long, stout; leaflets densely tomentose to glabrescent beneath (except on veins) but not glaucous.
- b. Leaflets moderately to densely tomentose beneath, soft-velvety to touch; upper surface moderately soft-pilose, not prominently reticulate.
- c. Terminal leaflet usually rhombic to deltoid, acute to cuneate or truncate at base, width generally at least two-thirds the length; articles chiefly rhomboidal (or the upper suture at least somewhat angled).....*D. viridiflorum*.
- c. Terminal leaflet (except the uppermost) elliptic-ovate, mostly rounded at base, width about one-half the length; articles becoming rounded above (*i. e.* the upper suture curved rather than angled).....*D. Nuttallii*.
- b. Leaflets glabrescent to moderately pilose and very strongly reticulate beneath.
- d. Leaves often unifoliolate, at least the terminal leaflet often truncate at base, moderately to abundantly pilose beneath; stipules mostly long-persistent, up to 10 mm. long, stipels up to 5 mm. long; articles large and with the upper suture mostly rounded.....*D. floridanum*.
- d. Leaves trifoliolate, narrowly ovate to rhombic, thick, uncinulate-pubescent along midrib and veins, otherwise essentially glabrous beneath; stipules early deciduous, 2–4 mm. long, stipels to 3 mm. long; articles with the upper suture chiefly angled.....*D. Fernaldii*.
- a. Pedicels longer, 10–19 mm. long, slender; leaflets essentially glabrous to puberulent, glaucous beneath.....*D. laevigatum*.

D. VIRIDIFLORUM (L.) DC. Suffrutescent; stem erect, chiefly simple, up to 3 m. high, somewhat ridged and grooved, moderately to sparsely pilose (usually becoming less so in age) and uncinulate-pubescent with downwardly directed trichomes; leaves (rarely uni- to) trifoliolate, stipulate, petiolate; the striate ovate- to lance-acuminate stipules truncate at base, long-attenuate at apex, with the inner surface essentially glabrous to

puberulent and the outer appressed-pilose, 3–7 mm. long; the chiefly linear- to lance-attenuate ciliate stipels puberulent on inner surface, puberulent and somewhat pilose on outer surface, 0.5–4 mm. long; petioles ridged and grooved, spreading-pilose and uncinulate-pubescent, 0.5–6.5 cm. long; leaf-rachis similar, 1.1–2.8 cm. long; the stout petiolules very densely pilose, 3–5 mm. long; leaflets mostly rhombic (the terminal one sometimes deltoid, with truncate base), acute to acuminate or obtuse, width about two-thirds the length, moderately to abundantly spreading-pilose with short straight or hooked hairs (or with both types) and the veins somewhat impressed above, rather densely tomentose with the soft spreading white trichomes denser along midrib and veins beneath; terminal leaflet 5.2–11.8 cm. long, 3.6–8.8 cm. wide; lateral leaflets 4–10.2 cm. long, 2–6.5 cm. wide; inflorescence racemose-paniculate, its rachis prominently ridged and grooved, uncinulate-pubescent; primary bracts ovate-acuminate, striate, pilose on dorsal surface, ciliate, 2–4 mm. long; secondary bracts linear, ciliate, puberulent, not long-persistent, 0.5–1.5 mm. long; pedicels spreading uncinulate-puberulent and somewhat pilose, 3–8 mm. long; calyx patent-pilose throughout, upper bifid lobe 2–3 mm. long, central tooth of lower lobe 2.5–4.5 mm. long, the lateral lobes 2–4 mm. long; corolla said to turn green after anthesis, standard obovate, mostly retuse, cuneate at base, 5–8.5 mm. long, 3.5–8 mm. wide; wings more or less oblong (often somewhat obliquely so), short-clawed, 4.5–8.5 mm. long, 1.5–3 mm. wide; keel-petals falcate, truncate at apex, narrowed to very slender claw, 7–9 mm. long, 1–3 mm. wide above; loment stipitate, mostly (2–)4–5(–6)-articulate; stipe scarcely to moderately uncinulate-puberulent, 3–6 mm. long; articles more or less rhomboidal, moderately to densely uncinulate-pubescent on surfaces and sutures, 5–9 mm. long, 3.5–5 mm. wide.—Prod. ii. 329 (1835), as to name, not as to plant; Beck, Bot. N. and Middle States, 84 (1823) as to plant. *Hedysarum viridiflorum* L., Sp. Pl. 748 (1753). *Meibomia viridiflora* (L.) Ktze., Rev. Gen. i. 197 (1891); emend. Schindl., Rep. Spec. Nov. xxiii. 356 (1927). *Desmodium Torreyanum* Schindl. l. c., nomen nudum in obs.—Chiefly in dry woods and clearings, n. Fla., to e. Tex., n. to Del. and inland only to Ark. and Tenn.

DELAWARE: NEWCASTLE CO.: dry woods, Townsend, Aug. 17, 1911, *J. R. Churchill*.

MARYLAND: NO FURTHER LOCALITY: 1865, *W. M. Canby* ex hb. Boott. KENT CO.: near Chestertown, Aug. 30, 1920. *Will Wallis* (US).

DISTRICT OF COLUMBIA: in vicinis Washington, D. C., Oct. 1, 1882, *L. F. Ward*.

VIRGINIA: NO FURTHER LOCALITY: *Clayton* (hb. Gron. in BM, TYPE; G, phot.). PRINCESS ANNE CO.: dry argillaceous fields and

bushy clearings, Rosemont, Sept. 7, 1935, *Fernald & Long*, no. 4899. NORFOLK CO.: dry open thicket in clay, west of Gertie, June 18, 1935, *Fernald, Griscom & Long*, no. 4660. JAMES CITY CO.: on white oak slopes, n. e. Jones Mill Pond, Williamsburg, Sept. 18, 1920, *E. J. Grimes*, no. 3020. ISLE OF WIGHT CO.: dry woods, James River, northeast of Bartlett, Sept. 18, 1937, *Fernald & Long*, no. 7465; white sand of dry pine barrens, south of Lee's Mill, Aug. 23 & Sept. 2, 1940, *Fernald & Long*, no. 12676. HENRICO CO.: dry oak woods and clearings bordering Whiteoak Swamp, west of Elko Station, Sept. 21, 1938, *Fernald & Long*, no. 9347; dry sandy woods, Elko, Aug. 30, 1925, *Wherry & Pennell*, no. 12497 (Phila.). SOUTHAMPTON CO.: dry sand, pine barrens about 7 mi. south of Franklin, Sept. 7 & 8, 1937, *Fernald & Long*, no. 7464.

NORTH CAROLINA: DURHAM CO.: pine woodland near Durham, Oct. 10, 1938, *R. K. Godfrey*, no. 6703.

SOUTH CAROLINA: NO FURTHER LOCALITY: *M. A. Curtis* (a unifoliate form, annotated as *D. rhombifolium* by A. M. Vail). BERKELEY CO.: extensive burned-over pineland clearing, near Santee-Cooper Diversion Dam, west of Pineville, Sept. 13, 1939, *Godfrey*, no. 8224.

FLORIDA: DUVAL CO.: (probably from Jacksonville, cf. Hooker, *Comp. to Bot. Mag.* i. 23 (1835)), *Drummond*; dry pine or oak lands near Jacksonville, fl. Aug. 6, fr. Sept. 15, 1894, *A. H. Curtiss*, no. 4902.

TENNESSEE: COUNTY INDEFINITE: along the French Broad River between Paint Rock and Del Rio, Sept. 1, 1897, *Kearney*, no. 653 (Mo.). MADISON CO.: rich thickets, Jackson, Sept., 1892, *S. M. Bain*, no. 304 (NY).

ALABAMA: NO FURTHER LOCALITY: *Dr. Gates* (NY).

MISSISSIPPI: HANCOCK CO.: in cemetery of Bay St. Louis, Sept. 13, 1883, *Langlois* (NY). WILKINSON CO.: Sept. 9, 1864, *D. L. Phares*, no. 1725 (US, annotated by Schindler as *Meibomia viridiflora*).

ARKANSAS: ST. FRANCIS CO.: Crowley's Ridge, Madison, ca. 65 m. alt., Sept. 3, 1940, *Demaree*, no. 21579. LINCOLN CO.: Yorktown, Bayou Bartholomew, ca. 60 m. alt., Sept. 20, 1936, *Demaree*, no. 13715A. HOWARD CO.: Baker Springs, Oct. 7 and 8, 1909, *J. H. Kellogg* (Mo, 2 sheets).

LOUISIANA: NO FURTHER LOCALITY: *M. A. Curtis* (Mo). CADDO PARISH: Shreveport, Aug. 5, 1847, *Dr. Gregg*, s. n., p. p. (Mo). CALCASIEU PARISH: Sulphur Spring, Oct., 1919, *Arsène*, no. 11343 (US, annotated by Schindler as *Meibomia viridiflora*).

TEXAS: HARRIS CO.: Houston, Sept., 1842, *Lindheimer*. BRAZOS CO.: 2-3 miles east of Koppe Bridge in deep sand in woods, Sept. 13, 1941, *R. G. Reeves*, no. 1095.

The combination *Desmodium viridiflorum* has been generally attributed in manuals and lists to Beck (1833). However, DeCandolle made the same combination in the Prodrumus (1825) and, although the plant on which he based his combination was not true *H. viridiflorum* L., according to the International Rules of Botanical Nomenclature his combination must be retained.¹ Discussion of the relationship of *D. viridiflorum* and *D. Nuttallii* will follow the latter species.

D. Nuttallii (Schindl.), comb. nov. Herbaceous to suffrutescent; stems striate, stout, up to 1.5 m. (Indiana, *Kriebel*), erect or ascending, simple or branched from base, densely to moderately uncinulate-pubescent and somewhat spreading-pilose; leaves chiefly trifoliolate (sometimes unifoliolate at base), stipulate, petiolate; the striate lance- to ovate-acuminate ciliate stipules with truncate base essentially glabrous on inner surface and rather densely appressed-pilose on dorsal surface, not very long-persistent, 3–5.5(–6.5) mm. long; the subulate stipels ciliate and densely white-pilose on outer surface, 1.5–3.5(–4) mm. long; petioles striate, rather densely uncinulate-pubescent and sparsely to densely patent-pilose with long straight trichomes, 0.5–2.5 (–3.3) cm. long; the sulcate leaf-rachis exceeding the petiole in length in the upper leaves, 0.4–1.6(–2.3) cm. long; petiolules very densely long-pilose, 1.5–4 mm. long; terminal leaflets ovate to rhombic on upper portions of plant, mostly elliptic-ovate below, with apex acute to obtuse and base mostly rounded (rarely cuneate to truncate), 5.2–10 cm. long, 2.8–5.6 cm. wide; the elliptic to ovate lateral leaflets becoming revolute, moderately appressed pilose above and slightly uncinulate-pubescent near base, rather densely and very softly tomentulose beneath, 3.4–8 (–10) cm. long, 2.1–5.1 cm. wide; inflorescence racemose-paniculate, chiefly terminal, rachis uncinulate-pubescent and with occasional spreading pilosity; the mostly ovate-acute striate and ciliate primary bracts puberulent and pilose over dorsal surface, 2–4 mm. long; the lance-ovate secondary bracts ciliate and pilose, 0.5–1.5 mm. long; pedicels uncinulate-pubescent and very finely puberulent, (2.5–)3.5–6.5 mm. long; calyx somewhat pilose throughout but chiefly so along the central portions of the lobes, upper bifid lobe 1.5–2 mm. long, central tooth of lower lobe 2–3.5 mm. long, lateral lobes 1.5–2.5 mm. long; corolla about twice length of calyx; standard obovate, with more or less cuneate

¹ Cf. Art. 54, paragraph 2, emended in Journ. Bot. lxxiv. 76 (1936): "When, on transference to another genus, the specific epithet has been applied erroneously in its new position to a different plant, the new combination must be retained for the plant on which the epithet was originally based, and must be attributed to the author who first published it".

base, (4–)4.5–6.5 mm. long, 4–5 mm. wide; wings oblong-elliptic or falcate with rounded apex, 4–6 mm. long, 1.5–2.5 mm. wide; keel-petals falcate with truncate apex, abruptly narrowed to a claw one-third the length, (4.5–)5–7 mm. long, 1.5–2 mm. wide above; loment stipitate, 1–4-articulate; stipe 2.5–4 mm. long; articles with rounded upper suture and more or less cuneate lower suture, uncinulate-pubescent throughout, 4–7 mm. long, 3–4.5 mm. wide.—*Meibomia Nuttallii* Schindl., Rep. Spec. Nov. xxiii. 354 (1927). *Desmodium viridiflorum* of many authors, p. p.—Chiefly in dry sandy open woods, N. Y. to Ind., s. to n. Fla., Ala. and Ark.

NEW YORK: KINGS CO.: copse, Brooklyn, Sept. 1, 1842, ex hb. *John Carey*.

NEW JERSEY: CUMBERLAND CO.: dry sandy open pine and oak woods about 1 mi. w. of Hoffmans Mill, Sept. 1, 1933, *Fogg*, no. 5980.

PENNSYLVANIA: NORTHAMPTON CO.: Chestnut Hill, Easton, Sept. 5, 1894, *T. C. Porter*. DELAWARE CO.: dry field, Wayne, Sept. 10, 1910, *Bartram*, nos. 1158 and 1167.

MARYLAND: BALTIMORE CO.: railroad embankment, Bare Hills, Sept. 15 and 16, 1908, *J. R. Churchill* (G, 3 sheets).

VIRGINIA: SOUTHAMPTON CO.: dry pine woods west of Adams Grove, Sept. 14, 1937, *Fernald & Long*, no. 7469; woods, Southampton, *Pursh* (Phila; G; phot.). FAUQUIER CO.: woods near High Point, above Broad Run Station, western slope of Bull Run Mountains, Sept. 29, 1935, *Allard*, no. 1027. DINWIDDIE CO.: dry pine and oak woods south of Carson, Sept. 14, 1937, *Fernald & Long*, no. 7468. BEDFORD CO.: Sept. 1871, *A. H. Curtiss*. CRAIG CO.: Craig's, 600 m. alt., Aug. 22, 1903, *E. S. & Mrs. Steele*, no. 72 (US (490070) LECTOTYPE; G, duplicate).

NORTH CAROLINA: NASH CO.: pineland at Middlesex, Oct. 9, 1938, *Godfrey & Kerr*, no. 6667. WILSON CO.: moist humus soil, recently cleared woodland, 4 mi. se. of Wilson, July 7, 1922, *L. F. & F. R. Randolph*, no. 718. SAMPSON CO.: pineland near Rosebarn, June 11, 1938, *Godfrey*, no. 4531. STOKES CO.: Salem, *Schweinitz*, s. n., p. p. (Phila). BUNCOMBE CO.: dry, open woodlands, Biltmore, Sept. 10, 1898, *Biltmore Herb.*, no. 3788a. SWAIN CO.: woods, ca. 560 m. alt., Aug., 1891, *Beardslee & Kofoid*.

SOUTH CAROLINA: AIKEN CO.: Aiken, Sept. 24, 1866, *Ravenel* (G, Mo).

FLORIDA: ALACHUA CO.: on dry cleared scrub-oak land near Hogtown Creek and Newberry Road west of Gainesville, Oct. 17, 1945, *West & Arnold*, no. 4 (Fla).

INDIANA: BROWN CO.: in partial shade on old field, Cornus Ridge, 5.5 mi. ne. of Nashville, Sept. 18, 1941, *Friesner*, no. 16419. LAWRENCE CO.: open woods, above Gardner Kaolin Mines, 3.4 mi. sw. of Bryantsville, Sept. 12, 1934, *Kriebel*, no.

2642. POSEY CO.: in sandy soil on the high bank of Rush Creek in the Dransfield woods about 3 mi. s. of New Harmony, Sept. 22, 1934, *Deam*, no. 55697.

TENNESSEE: KNOX CO.: dry woods along Tennessee River, Knoxville, Oct. 2, 1904, *Ruth*, no. 293.

ALABAMA: LEE CO.: Auburn, *Earle & Baker*.

MISSOURI: MC DONALD CO.: dry ground, Sept. 1, 1893, *Bush*, no. 62 (C, G).

ARKANSAS: woods, nw. Arkansas, *F. L. Harvey*, no. 1. HOWARD CO.: Baker Springs, Oct. 5 and 7, 1909, *J. H. Kellogg* (Mo (1 full sheet and portions of two others)).

D. Nuttallii is very closely related to *D. viridiflorum*, but, except for the specimens annotated by Schindler in the United States National Herbarium, seems not to have been taken up, despite the fact that many students have recognized the existence of another element in the material often identified as *D. viridiflorum*. The most outstanding character by which *D. Nuttallii* may be distinguished from *D. viridiflorum* is the curved upper suture which gives the loment-articles a rounded appearance while those of *D. viridiflorum* are more nearly rhombic in outline. In general, the shape of the terminal leaflets as well as the somewhat smaller size of all its parts and its more inland range serve to separate *D. Nuttallii* from its nearest relative.

Since Schindler cited no type (nor, in fact, any specimens) when he described this species I am citing as the LECTOTYPE a specimen from Craig's, Craig County, Virginia, collected by Mr. and Mrs. E. S. Steele, no. 72 (US), which was annotated by Schindler in the course of his studies.

Desmodium rhombifolium (Ell.) DC. has been considered an integral part of our more southerly flora for a long period, in spite of the fact that its identity has not ever been completely clear. Torrey & Gray in the *Flora of North America* considered it identical with *D. laevigatum* and it has more recently been treated as synonymous with *D. floridanum*. Part of the difficulty has arisen through mixed collections, Elliott apparently having distributed specimens as identical, which were unlike that in his own herbarium; and part through some confusion in Elliott's own treatment. The specimen which had been labeled by Elliott as *H. rhombifolium* was photographed for the Gray Herbarium by Mrs. C. A. Weatherby and has recently, through

the kindness of the director, Dr. E. Milby Burton, been lent me for study. At the bottom of the sheet is Elliott's label with the inscription "*H. rhombifolium mihi*" and below it "*oblongifolium Muhl.*" In his Flora Elliott describes as new under *Hedysarum ciliare*, a variety—*oblongifolium*, to which I think the second inscription as well as the plant may be referred. Of the identity of Muhlenberg's plant I am not certain but Elliott may well have considered it the same as his new variety. At any rate the specimen, in flower and fruit, though not in good condition, belongs definitely to our series *Pauciarticulata*, which includes also *D. ciliare*, and not to the series *Stipitata* of which *D. floridanum* and the material up to now treated as *D. rhombifolium* are members.

In view of the long period of confusion it seems best to me to place *D. rhombifolium* in the category of a *nomen confusum* and to deal separately with the material identified as that species which is, however, not related to Elliott's plant. The more southern material with persistent stipules and strongly reticulate often unifoliate leaflets is *D. floridanum* Chapm. The other element with early-deciduous stipules and smoother trifoliate leaves I am describing as new and calling *D. Fernaldii*.

D. FLORIDANUM Chapm. Herbaceous; the stout, lineate to somewhat ridged and grooved simple (only rarely branched at base) stem, up to 4.5 dm. high excluding inflorescence, mostly uncinulate-pubescent, occasionally also with some long, straight white spreading trichomes interspersed; leaves mostly unifoliate below, trifoliate above, stipulate, petiolate; the lance- to narrowly ovate-attenuate truncate stipules glabrous within, ciliate, puberulent and somewhat pilose on dorsal surface, persistent, 4–10 mm. long; the linear-attenuate to lanceolate stipels finely puberulent with some scattered longer pilosity, persistent, 1.5–5.5 mm. long; the finely ridged and grooved petioles densely to moderately uncinulate-pubescent, with straight white pilosity sparse to moderate, 1.4–3.5 cm. long; leaf-rachis similar or deeply sulcate, usually with less pubescence, 0.6–2 cm. long; the stout petiolules white with spreading pilosity, uncinulate-puberulent, 1–4 mm. long; the leaflets uncinulate-puberulent and soft-pilose with scattered fine straight trichomes beneath and with the venation prominently reticulate; the rhombic to deltoid or ovate terminal leaflet cuneate to truncate or rounded at base, obtuse to acute at apex, 4–9 cm. long, 2–5.4 cm. wide; lateral leaflets mostly similar but smaller, 3–6 cm. long, 1.5–2.7 cm. wide; inflorescence

leafless, racemose-paniculate or frequently unbranched, its rachis finely ridged and grooved, uncinulate-pubescent with finer shorter hairs than on stem; the ovate-acuminate primary bracts truncate to cordate, glabrous within, ciliate, sparsely to moderately straight-pilose and very finely puberulent on the dorsal surface, 2.5–4.5 mm. long; the lanceolate to lingulate secondary bracts ciliate, puberulent and somewhat straight-pilose on dorsal surface, 1–2 mm. long; pedicels very finely uncinulate-puberulent, (4.5–)6–8 mm. long; calyx very finely uncinulate-puberulent with some long, white, straight trichomes chiefly on the teeth of both lobes; upper bifid lobe ca. 2.5 mm. long, central tooth of lower lobe 3–4 mm. long, lateral teeth 2.5–3 mm. long; corolla about twice as long as calyx; standard obovate, 6.5–7 mm. long, 5 mm. wide, wings elliptical to somewhat oblong, short-clawed, 6.5–7 mm. long, 1.5–2.5 mm. wide; keel-petals falcate, long-clawed, 7–7.5 mm. long, 2–2.5 mm. wide; loment stipitate, 3–5-articulate; stipe 1.5–4 mm. long; articles more or less deltoid, curved on dorsal suture, broadly obtuse on ventral suture, uncinulate-pubescent throughout, 6–7 mm. long, 4–5 mm. wide.—Fl. So. U. S. 102 (1860). *Meibomia floridana* (Chapm.) O. Ktze., Rev. Gen. i. 198 (1891). *Meibomia rhombifolia* sensu Vail in Bull. Torr. Bot. Cl. xix. 113 (1892) as to syn. cit. *D. floridanum*. *M. rhombifolia* sensu Schindl. in Rep. Spec. Nov. xxiii. 356 (1927) in obs. p. p.—Dry, sandy pinelands, southern South Carolina, Georgia and Florida.

SOUTH CAROLINA: BEAUFORT CO.: sandy soil, Beaufort, Sept. 5, 1904, *Biltmore Herb.*, no. 3796a (NY). JASPER CO.: sandy open space under pines, 2 miles northeast of Coosawhatchie, July 19, 1927, *Wiegand & Manning*, no. 1597.

GEORGIA: LOWNDES CO.: along the Withlocooche River, near Valdosta, June 6–12, 1895, *Small* (C).

FLORIDA: WITHOUT FURTHER LOCALITY: *G. H. Bates*, 1889 (NY); middle Florida, *Chapman*, no. 122 (NY); no data, "Herb. Chapman, *Desmodium floridanum* S. fl!" (US (55092), annotated by Schindler as *Meibomia rhombifolia*). DUVAL CO.: dry open sandy oak woods, Tisonia, July 27, 1927, *Wiegand & Manning*, no. 1598; dry pine barren, May 28, 1902, *Fredholm*, no. 5254; dry, fertile, pine woods near Jacksonville, Aug. 12, 1896, *A. H. Curtiss*, no. 5717A; dry pine or oak lands near Jacksonville, fl. Aug. 6, fr. Sept. 15, 1894, *A. H. Curtiss*, no. 4902 (G; NY; US, p. p.). ORANGE CO.: Killarney, Aug., 1889, *O. Vesterlund*, no. 26 (US, annotated by Schindler as *Meibomia rhombifolia*). BREVARD CO.: scrub oak land, Okeechobee region, Apr. 6, 1903, *Fredholm*, no. 5765; dry pine lands, Eau Gallie, July 22, 1896, *A. H. Curtiss*, no. 5717 (G; NY). DADE CO.: in pinelands, Ft. Lauderdale, Nov. 19 and 25, 1903, *Small & Carter*, no. 1165 (NY); pinelands south of Miami River, Nov. 26–Dec. 20, 1913, *J. K. & G. K.*

Small, no. 4747 (NY). LAKE CO.: high pineland in vicinity of Eustis, May 1–15, 1894, *G. V. Nash*, no. 698 (NY). LEE CO.: along ditches, Myers, July–Aug., 1900, *A. S. Hitchcock*, no. 67. PASCO CO.: in dry pinelands, Lake Jovita, May 15, 1927, *H. O'Neill* (Mo). HILLSBORO CO.: Tampa, Aug., 1898, *A. M. Ferguson* (Mo). FRANKLIN CO.: Apalachicola, ex hb. "Flora of the Southern United States, and Supplement, *A. W. Chapman*, M.D." (US (943841), LECTOTYPE; G, duplicate).

Although Schindler, in his treatment, said that without fruit it was difficult to distinguish *D. viridiflorum*, *D. Nuttallii* and *D. rhombifolium* (including *D. floridanum*), the following characters, in addition to strong differences in habit and shape and pubescence of leaflets, will serve to separate *D. floridanum* from *D. viridiflorum*:

	D. FLORIDANUM	D. VIRIDIFLORUM
BRACTS	Only sparsely to moderately pilose on outer surface.	Abundantly pilose on outer surface at least when young.
PEDICELS	Finely uncinulate-puberulent.	Uncinulate-puberulent and abundantly pilose.
CALYX	Puberulent with only moderate pilosity on lobes.	Abundantly long-pilose throughout.

AS LECTOTYPE of *Desmodium floridanum* I have chosen a specimen from Apalachicola, Florida which bears a label indicating that it was part of the collection used by Chapman in the preparation of his Flora. As noted earlier, *Desmodium floridanum* has been placed in the synonymy of *D. rhombifolium* by authors generally. It seems, however, to be a perfectly distinct species. The particular characters which separate it from *D. Fernaldii* (*D. rhombifolium* of authors generally) will be discussed under that species.

D. Fernaldii sp. nov., herbacea robusta; caule ad 1.3 m. alto de radice tenui ramosoque 4 dm. longo; caule ramisque teretis vel paullum angulatis, subtiliter puberulentibus et sparse vel dense uncinulato-pubescentibus; foliolis moderate uncinulato-pubescentibus et breviter pilosis, subtus pallidioribus et uncinulato-pubescentibus in nervo medio et venis, superficie plus minusve glabra, apice obtuso vel acuto, basi cuneato vel rotundato, (4.5–)6–8(–9.3) cm. longis, 2.5–5 cm. latis; foliolis lateralibus ellipticis vel ovato-ellipticis, saepe in apice acutis et in basi truncatis, 4–6 cm. longis et 1.8–3.5 cm. latis; stipulis lanceolato-attenuatis, striatis, pilosis, mox deciduis, 2–4 mm. longis; stipite lomenti 2.5–4 mm. longo; lomento 1–5-articulato, articulis uncinulato-pubescentibus omnino, plus minusve deltoideis,

suturo superiori leviter anguloso, inferiori obtuso, 5.5–8 mm. longo, 3.3–5 mm. lato.—*Desmodium rhombifolium* sensu auth. generally, not Ell. *Meibomia rhombifolia* sensu Vail in Bull. Torr. Bot. Cl. xix. 113 (1892) excl. syn. cit. *D. floridanum* Chapm. *D. laevigatum* sensu Torr. & Gray, Fl. N. Am. Suppl. to vol. i. 695 (1840), not Nutt.—Sandy woods, se. Va. to S. C., La., and Newton Co., Tex.

VIRGINIA: NO FURTHER LOCALITY: *Rugel* (G, annotated by Gray as *D. laevigatum* β . *rhombifolium*). NORFOLK CO.: Northwest, Sept. 6, 1893, A. A. Heller, no. 1348. NANSEMOND CO.: dry sandy pine woods near Baines Hill School southwest of Cypress Chapel, Sept. 17, 1937, *Fernald & Long*, no. 7470; dry white sand of pine-barrens, east of Cox Landing, south of South Quay, Aug. 27, 1939, *Fernald & Long*, no. 11055 (G, TYPE); rich sandy oak and hickory woods above Nansemond River, east of Cahoon Pond, northwest of Suffolk, Sept. 12, 1941, *Fernald & Long*, no. 13626. ISLE OF WIGHT CO.: sandy pine and oak woods south of Zuni, Aug. 24, 1936, *Fernald & Long*, no. 6613. KING WILLIAM CO.: sandy oak woods southwest of Aylett, July 31, 1941, *Fernald & Long*, no. 13361. SOUTHAMPTON CO.: dry sandy open pine and oak woods 6 to 7 miles south of Franklin, July 19, 1938, *Fernald & Long*, no. 8728; border of dry sandy woods, Mars Hill Church, Aug. 21, 1938, *Fernald & Long*, no. 9067.

SOUTH CAROLINA: BERKELEY CO.: dry soils, Santee Canal, Sept., *H. W. Ravenel* (G, a unifoliolate form).

FLORIDA: WITHOUT FURTHER LOCALITY: *Chapman*, no. 188 (NY). ALACHUA CO.: dry knoll under *Quercus falcata* at Planera Hammock, Gainesville, Sept. 27, 1945, *West & Arnold* (Fla).

LOUISIANA: WITHOUT FURTHER LOCALITY: *Hale* (G, annotated as *D. laevigatum* β . *rhombifolium* by Gray; NY).

I am happy to name this species, abundant in southeastern Virginia, for Professor Merritt Lyndon Fernald whose intensive work on the flora of that state has clarified many floristic problems of long standing.

The distinguishing characters between *D. floridanum* and *D. Fernaldii* are here summarized:

	D. FLORIDANUM	D. FERNALDII
INFLORESCENCE	Little or not at all branched, naked.	Much branched.
LEAFLETS	Under surface mostly soft-pilose between lateral veins.	Under surface essentially glabrous between chief lateral veins.
STIPULES AND STIPELS	Long-persistent.	Early deciduous.
ARTICLES OF THE LOMENT	Curved on upper suture.	Mostly angled on upper suture.

D. LAEVIGATUM (Nutt.) DC. Suffruticose; the mostly terete stem lineate, (glabrous to) finely and minutely puberulent; leaves trifoliolate, stipulate, petiolate; stipules apparently very early-deciduous, only scars seen; stipels linear-lanceolate, puberulent on both surfaces, 1–3 mm. long; the glabrous to uncinulate-puberulent petioles angular or sulcate on adaxial surface, 1.8–6.6 cm. long; rachis similar, 1.1–2.8 cm. long; petiolules usually rugose, (glabrescent to) densely uncinulate-puberulent, 2.5–3 mm. long; the ovate-acute to more or less acuminate terminal leaflets mucronulate, rounded to acute at base, 4.3–8.4 cm. long, 2.8–5.2 cm. wide; the elliptic-oblong or -ovate lateral leaflets obtuse at apex, truncate or rounded at base, 3.2–7.4 cm. long, 2.5–4 cm. wide; upper surface of leaflets glabrous to sparsely puberulent, venation distinct because lighter in color than leaf-tissue, lower surface glabrous to sparsely puberulent or short-pilose, mostly on the midrib and chief lateral veins, margins becoming revolute, somewhat ciliate at base; inflorescence axillary and terminal, its rachis terete to angled, finely lineate, uncinulate-puberulent; primary bracts ovate-acuminate, striate, puberulent on both surfaces, 3–3.5 mm. long; secondary bracts slenderly ovate-acuminate, puberulent, ciliate, 1–2 mm. long; pedicels slender, lax, uncinulate-puberulent, 10–19 mm. long; calyx puberulent throughout, appressed pilose on the lobes and with finely ciliate teeth, the central tooth of lower lobe 3.5–4.5 mm. long, lateral teeth 2.5–3.5 mm. long, the upper bifid lobe 2.5–3.5 mm. long; corolla about twice as long as calyx; standard obovate, retuse to entire, cuneate at base, 7–9.5 mm. long, 4.5–7 mm. wide; wings semielliptic to oblong, short-unguiculate, somewhat to scarcely auriculate, 6.5–10 mm. long, 2–3.5 mm. wide; keel-petals more or less falcate, narrowed to a slender claw, apex truncate, 7.5–9 mm. long, 2–3 mm. wide; loment stipitate, 2–5-articulate; stipe mostly glabrous, 6–6.5 mm. long; articles more or less rhomboidal, reticulate, uncinulate-puberulent, 5–7 mm. long, 3.5–4 mm. wide.—Prod. ii. 329 (1825). *Hedysarum laevigatum* Nutt., Gen. ii. 109 (1818). *Meibomia laevigata* (Nutt.) O. Ktze., Rev. Gen. i. 198 (1891). *D. rhombifolium* (Ell.) DC., var. β . Torr. & Gray, Fl. N. Am. i. 361 (1840). *D. laevigatum* (Nutt.) DC., var. β . *monophyllum* Wood, Cl.-Bk. Bot. 308 (1861). *Meibomia laevigata* (Nutt.) O. Ktze., var. *monophylla* (Wood) Vail in Bull. Torr. Bot. Cl. xix. 112 (1892) in synonym. The combination actually made by Vail is incorrectly attributed by her to Wood (who described the variety under *Desmodium*) and the reference given to Wood's place of publication (Bot. & Fl. 1870) is not the earliest one.—Dry sandy woods and clearings, N. Y. to Ind. and Mo., s. to n. Fla., Tenn., La. and e. Tex.

NEW YORK: SUFFOLK CO.: Manorville, L. I., Sept. 5, 1878, *H. W. Young* (US); Manor[ville?], Aug. 26, 1872, *E. S. Miller*.

NEW JERSEY: NO FURTHER LOCALITY: *Nuttall* (Phila, ISOTYPE; G, photo). ATLANTIC CO.: sandy clearing in pine barren woods, Hammonton, Sept. 4, 1917, *A. Gershoy*, no. 362. GLOUCESTER CO.: Swedesboro, Aug. 20, 1895, *C. D. Lippincott*, s. n.

PENNSYLVANIA: NORTHAMPTON CO.: Chestnut Hill, Easton, Sept. 5, 1894, *T. C. Porter*. PHILADELPHIA CO.: woods, East Fairmount Park, Philadelphia, Sept. 24, 1875, *Redfield*, no. 4246 (Mo). BERKS CO.: unused trolley line $\frac{1}{2}$ mile sw. Klapperthal, ca. 100 m. alt., Oct. 4, 1940, *Berkheimer*, no. 2358.

MARYLAND: WICOMICO CO.: common in *Pinus Taeda* forests near Salisbury, Sept. 20, 1914, *Tidestrom*, no. 7438; Salisbury, July, 1887, ex hb. *Canby*. BALTIMORE CO.: sandy soil in clearing, Sept. 17, 1908, *J. R. Churchill*.

VIRGINIA: NORTHAMPTON CO.: dry pine woods east of Eastville, Oct. 12, 1935, *Fernald & Long*, no. 5325. PRINCESS ANNE CO.: dry pine woods, Macon's Corner, Sept. 21, 1933, *Fernald & Long*, no. 2829 and Sept. 8, 1935, no. 4898. NANSEMOND CO.: dry white sand of pine barrens, east of Cox Landing, south of South Quay, Aug. 27, 1939, *Fernald & Long*, no. 11056. SUSSEX CO.: dry white sand of woods and clearings near Chub, Sept. 20, 1940, *Fernald & Long*, no. 12677. GREENSVILLE CO.: low clearing along Quarrel's Creek, below Pair's Store, Sept. 14, 1944, *Fernald (& J. B. Lewis)*, no. 14714. FAUQUIER CO.: woods near High Point north of Beverly, western slope of Bull Run Mountains, Sept. 29, 1935, *Allard*, no. 981. BEDFORD CO.: Sept., 1871, *A. H. Curtiss*.

NORTH CAROLINA: MOORE CO.: piney woods, Pinehurst, Aug. 21, 1897, *O. Katzenstein*. BUNCOMBE CO.: dry woodlands, Biltmore, Sept. 10, 1898, *Biltmore Herb.*, no. 1170a (G; Mo).

SOUTH CAROLINA: GEORGETOWN CO.: pine-barren clearing, 5 miles south of Georgetown, Sept. 9, 1939, *Godfrey*, no. 8120.

GEORGIA: CLARKE CO.: dry woods, Athens, 210 m. alt., June 20, 1900, *R. M. Harper*, no. 12. JASPER CO.: Monticello, Jasperly, 1848, *T. C. Porter*.

FLORIDA: DUVAL CO.: Jacksonville, 1833, *Drummond*. ALACHUA CO.: dry knoll under *Quercus falcata* at Planera Hammock, Gainesville, Oct. 7, 1945, *Arnold* (Fla); on dry cleared scrub-oak land near Hogtown Creek and Newberry Road, west of Gainesville, Oct. 17, 1945, *West & Arnold*, no. 1 (Fla).

INDIANA: BROWN CO.: old hilltop field, Cornus Ridge 5.5 mi. ne. Nashville, Sept. 11, 1941, *Friesner*, no. 16353. LAWRENCE CO.: open black-white oak ridge, 2 miles sw. Bryantsville, Aug. 16, 1934, *R. M. Kriebel*, no. 2643.

TENNESSEE: rocky woods, Chilhowee Mts., ca. 660 m. alt., Sept., *A. H. Curtiss*, no. 620. DAVIDSON CO.: vicinity of Nashville, *Gattinger*.

MISSOURI: REYNOLDS CO.: head of ravine above Kelley (Cook) Spring, 2 mi. south of Oates, between West Fork and Centerville, Sept. 22, 1935, *Steyermark*, no. 19770 (Mo).

ARKANSAS: DREW CO.: ridge woods, Monticello, 80 m. alt., Sept. 12, 1937, *Demaree*, no. 16220 (G, this collection should be checked in other herbaria, there seems to be a mixture). BRADLEY CO.: low wooded ridges, Jersey, ca. 33 m. alt., Sept. 18, 1938, *Demaree*, no. 18333. GARLAND CO.: low rocky hills above proposed dam across Ouachita River, Cedar Glades, ca. 140 m. alt., Aug. 28, 1939, *Demaree*, no. 20454. POLK CO.: low rocky hills, Shady Lake, Shady, 400 m. alt., Aug. 12, 1937, *Demaree*, no. 15697, p. p.

LOUISIANA: NO FURTHER LOCALITY: *Hale*.

TEXAS: NO FURTHER LOCALITY: *Wright*. HARRIS CO.: Houston, Aug., 184—, *Lindheimer*. DALLAS CO.: sandy woods, rare, Sept., 1874, *Reverchon*.

In their Flora of North America (p. 361) Torrey & Gray quote Nuttall's description of *D. laevigatum* in its entirety and state that they have not seen specimens. In the Supplement (p. 695) however, the authors say:

10. *D. laevigatum* (Nutt.) proves, from the examination of an original specimen, to be the same with *D. rhombifolium*. Our notice of *D. laevigatum* should therefore be erased and the name adopted in place of *D. rhombifolium*.

There is in the Gray Herbarium a specimen (Louisiana, *Hale*) annotated by Dr. Gray: "*D. rhombifolium* β . Fl. p. 361 *D. laevigatum*, *suppl.*"; this specimen is good *D. laevigatum*, a little larger in all its parts than the isotypic material of Nuttall's species which is at hand, but otherwise perfectly comparable. Elliott's type of *H. rhombifolium* is, on the other hand, not at all identifiable with *D. laevigatum*.

C. THE DESMODIUM PANICULATUM COMPLEX

In most recent treatments there has been no question at all concerning the identity of *D. paniculatum*. The two varieties of it described by Torrey & Gray have either been applied to the extremes or ignored. An earlier variety described by Desvaux (under *Hedysarum paniculatum*) and transferred to *Meibomia paniculata* by Schindler, included (in his sense) a large portion of the material previously treated as *D. Dillenii* as well as *D.*

glabellum. I shall consider first *D. paniculatum* and then the other members of the group.

DESMODIUM PANICULATUM (L.) DC. Prod. ii. 329 (1825), var. **typicum**. *Hedysarum paniculatum* L. Sp. Pl. 749 (1753). *Meibomia paniculata* (L.) Ktze. Rev. Gen. 198 (1891). *D. paniculatum*, [var.] β . *angustifolium* Torr. & Gray, Fl. N. Am. 364 (1840). *M. paniculata*, var. *angustifolia* (Torr. & Gray) Vail, Bull. Torr. Bot. Cl., xix. 112 (1892). *M. angustifolia* (Torr. & Gray) Kearney, Bull. Torr. Bot. Cl., xx. 481 (1893), not (HBK.) Ktze. *M. paniculata*, var. *Chapmani* Britton, Mem. Torr. Bot. Cl. v. 204 (1894).

Linnaeus's *Hedysarum paniculatum* was based on a Clayton plant in the Gronovian Herbarium (British Museum, Nat. Hist.). From the photograph in the Gray Herbarium it is clear that the leaflets are of the narrower type (at least on upper portions of the plant), a terminal leaflet being only 7 mm. broad at base. In other characters there is no difference between the broad- and narrow-leaved plants. There is, on the other hand, such complete gradation from one extreme to the other that they are best kept together as the somewhat polymorphic var. *typicum*.

Torrey & Gray's variety " β . *angustifolium*: leaves all narrower" from "Southern and Western States!" has no more validity, so far as I can see, than their var. *pubens* discussed below. It is typical *D. paniculatum*.

There are a few other individual specimens which differ in loment-characters from typical *D. paniculatum*, but lack of sufficient material or adequate information about the material at hand makes me hesitate to treat them as an entity of real taxonomic significance.

In the hope, however, that collectors will watch for such peculiar specimens I cite here the most outstanding. Two specimens with elliptic to only obtusely angled loment-articles and very broad isthmi: INDIANA: KNOX CO.: sandy soil along railroad, $\frac{1}{2}$ mi. south Oaktown, Sept. 11, 1934, *Friesner*, no. 7922. NEBRASKA: THURSTON CO.: Missouri River bottoms, Winnebago Indian Reservation, Aug. 9, 1941, *W. B. Fox*, s. n.

Two specimens with fruit approaching that of *D. ciliare*, but with habit- and pubescence-characters of one of the phases of *D. paniculatum*: RHODE ISLAND: PROVIDENCE CO.: Providence, *S. T. Olney*. TENNESSEE: COCKE CO.: within three miles of Wolf Creek Station, Aug. 31, 1937, *Kearney*, no. 659 (US).

Var. **epetiolum**, var. nov. A var. *typica* differt foliis sessilibus vel brevipetiolatis; articulis lomentorum rotundatis.—*D. paniculatum*, var. *pubens* sensu most authors.—Sphagnous bogs, damp clearings and sandy pine- and oak-woods, Coastal Plain of se. Va. and e. N. C.; Colorado Co., Tex.

VIRGINIA: ISLE OF WIGHT CO.: sandy pine- and oak-woods south of Zuni, Aug. 24, 1936, *Fernald & Long*, no. 6615. NANSEMOND CO.: dry sandy pine-woods near Baines Hill School, southwest of Cypress Chapel, Sept. 17, 1937, *Fernald & Long*, no. 7471 (G, TYPE); white sand of pine- and oak-woods and clearings near Cathole Landing, west of Factory Hill, Aug. 23, 1940, *Fernald & Long*, no. 12678½. NORFOLK CO.: Northwest, Sept. 6, 1893, A. A. Heller, no. 1255; damp old clearings and thickets, eastern side of Great Dismal Swamp, north of Wallacetown, Sept. 4, 1941, *Fernald & Long*, nos. 13630 and 13631. PRINCESS ANNE CO.: open sands back of dunes, Rifle Range, south of Rudy Inlet, Sept. 6, 1935, *Fernald & Long*, no. 4901. GREENSVILLE CO.: sphagnous bog about 1 mile northwest of Dahlia, Aug. 20, 1938, *Fernald & Long*, no. 9072.

NORTH CAROLINA: BEAUFORT CO.: pineland near Chocominty, July 20, 1938, *Godfrey*, no. 5408. COLUMBUS CO.: pine-woodland near Nokina, Aug. 29, 1938, *Godfrey*, no. 6354. ROBESON CO.: dry open sand-barrens, 14 miles southeast of Lumberton, July 4, 1927, *Wiegand & Manning*, no. 1591.

TEXAS: COLORADO CO.: 1 mile east of Weimar, Oct. 4, 1937, *Cory*, no. 25086.

Most of the material here designated as the new var. *epetiolum* had previously been named, with more or less doubt, var. *pubens* Gray. Var. *pubens*, however, does not seem to me to be a tenable variety. Gray described it in the following manner:

“γ. *pubens*: stem puberulent; leaves oblong-lanceolate, rather rigid, pubescent, especially beneath.”

with the citation:

“γ. Tampa Bay, Florida, *Dr. Burrows!*
Western Louisiana, *Dr. Hale!*

The two cited specimens are before me and they are not the plants with short-petiolate leaves and more or less broadly obtuse leaflets which have been quite generally called var. *pubens*, but rather the more pubescent extreme of *D. paniculatum*, var. *typicum* which is scarcely worthy of a name. The specimens which Gray cited are not whole plants, simply the uppermost

portion of stem with inflorescence. This accounts for the somewhat shorter petioles but these are no shorter than those similarly placed in plants of var. *typicum*.

Another group of plants which has been called var. *pubens* has the general aspect and superficial characters of var. *epetiolatum*, but with angular loment-articles as in var. *typicum*. It forms, in general, a group of somewhat more inland range than var. *epetiolatum*, but at present does not seem to constitute a unit sufficiently distinct morphologically or geographically from the typical state to be specially designated. Further field-studies may bring to light critical characters which will warrant segregation of these plants.

Desmodium Dillenii Darlington has been perhaps the least clearly understood species of the genus in our flora. It was based by Darlington on a series of specimens representing two different elements, both of which were incorporated by him in his description. Two of the specimens from Darlington's herbarium have short petioles (to 3.3 cm.) and obtuse leaflets, two others have long petioles (up to 7 cm.) and leaflets nearly acute. The Dillenian plate to which Darlington refers is a very crude drawing which could not with certainty be referred to any of our species, the only significant character which may be observed in it being short-petiolate leaves. In view of Darlington's own confusion and the perplexity of botanists ever since concerning his species I propose to reduce the name (as I have *D. rhombifolium*) to the status of *nomen confusum* and divide the composite into its distinct elements. The first of these, that with obtuse leaflets and shorter petioles, is *D. glabellum* (Michx.) DC., while the second, with acute leaflets and long petioles I am calling *D. perplexum* sp. nov.

Schindler reduced *D. glabellum* to *Meibomia paniculata*, var. *obtusata* (Desv.) Schindl. but *D. glabellum* seems to me too well defined for that disposition. In addition to the characters already mentioned the usually retuse leaflets with prominently reticulate venation are very characteristic. *D. perplexum*, on the other hand, has thinner leaflets usually more abundantly pilose and with little or only obscure reticulation.

D. perplexum sp. nov., herbacea; caule tenui vel robusto, uncinulato-puberulenti, fere piloso, 6 dm. longo de radice crasso

1 dm. longo; stipulis tenuis longo-attenuatis, persistentibus; petiolis et rhachibus foliorum pilosis; foliolis elliptico-ovatis vel ovatis praecipue acutis, undique pilosis; rhachibus inflorescentiae uncinulato-puberulentibus et moderate pilosis; pedicellis 1 cm. vel minus longis; lomentis stipitatis, 2–5-articulatis; articulis plus minusve rhomboideis, uncinulato-puberulentibus.—*D. Dillenii* Ell. in part (excl. plants with obtuse reticulate leaflets).—Sandy woods, centr. Me. to Wisc. and s. rather generally throughout our range and beyond.

Because of its wide distribution and the enormous number of collections in all herbaria I shall not now, except for the type, cite specimens of *D. perplexum*. This will be done, however, in the monographic treatment, where a map of the distribution of the species will also be presented.

TYPE: VIRGINIA: SUSSEX co.: thicket bordering Bryant Pond, about $\frac{1}{2}$ mile ne. of Waverly, Sept. 13, 1945, *Fernald & Long*, no. 14937 (G).

D. HUMIFUSUM (Muhl.) Beck, the remaining member of this group has not been much recognized since its description. Specimens of it have at various times been identified as *D. ochroleucum*, *D. glabellum* and various other species. It is a spreading (though stiff) plant with often broad, abruptly attenuate stipules and broad leaflets. Its leaflets are much thinner, less coriaceous and usually narrower, however, than those of *D. ochroleucum*, its flowers very much smaller, pedicels shorter and its lomentis with more numerous, smaller articles uncinulate-puberulent throughout (rather than glabrous except on sutures) and with margins not folded. From *D. glabellum* *D. humifusum* differs in its prostrate habit, thinner leaflets and broader and longer persistent stipules among other characters. Its distribution is much more local than that of *D. glabellum*.